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PREPARATORY COMMITTEE FOR THE UNITED NATIONS
CONFERENCE ON ENVIRONMENT AND DEVELOPMENT
Third session
Geneva, 12 August-4 September 1991
Item 2 (d) of the provisional agenda*

PREPARATIONS FOR THE UNITED NATIONS CONFERENCE ON ENVIRONMENT AND DEVELOPMENT ON THE BASIS OF GENERAL ASSEMBLY RESOLUTION 44/228 AND TAKING INTO ACCOUNT OTHER RELEVANT GENERAL ASSEMBLY RESOLUTIONS

Draft provisional agenda, organization of work and draft rules of procedure of the Conference

Report of the Secretary-General of the Conference

INTRODUCTION

1. The General Assembly, at its forty-sixth session, will be expected to approve the provisional agenda, organization of work and provisional rules of procedure of the Conference. The Preparatory Committee, for its part, should approve recommendations on these matters at its third session for submission to the Assembly. In order to assist the Preparatory Committee in its work, the Secretary-General of the Conference presents the following proposals for its consideration.

2. The basic framework for the preparation of proposals on these issues is provided by the provisions of General Assembly resolutions 44/228 of 22 December 1989 and 45/211 of 21 December 1990 in whole or in part. In this regard, it may be recalled that:

(a) In part I, paragraph 15, of General Assembly resolution 44/228, Member States had determined the objectives of the Conference;

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* A/CONF.151/PC/39.

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(b) In part II, paragraph 8 (a), of the same resolution, the Preparatory Committee was authorized to draft the provisional agenda of the Conference, in accordance with the provisions of General Assembly resolution 44/228;

(c) In part II, paragraph 12, of the same resolution, relevant non-governmental organizations in consultative status with the Economic and Social Council were requested to contribute to the Conference, as appropriate;

(d) In paragraph 5 of General Assembly resolution 45/211, it was decided that the Conference would be held in Rio de Janeiro, Brazil, from 1 to 12 June 1992;

(e) In paragraph 6 of the same resolution, the Assembly urged that representation at the Conference be at the level of head of State or Government;

(f) In paragraph 7 of the same resolution, the Secretary-General of the United Nations was invited to issue invitations to all States Members of the United Nations or members of specialized agencies and observers, in accordance with the established practice of the General Assembly.

3. Account must also be taken of the decisions adopted by the Preparatory Committee at its organizational, first and second sessions, the manner in which the Committee has translated the guidelines contained in General Assembly resolution 44/228 concerning the content of the Conference into specific agenda items for its work, and the approaches which the Secretary-General of the Conference has been authorized to develop in terms of possible outcomes. In addition, in General Assembly resolution 45/212 on the protection of global climate for present and future generations of mankind, Member States indicated that the negotiations for the preparations of an effective framework convention on climate change, containing appropriate commitments, and any related legal instruments as might be agreed upon, should be completed prior to the Conference and opened for signature during the Conference. The Assembly also requested the Chairman of the Intergovernmental Negotiating Committee, on behalf of the Committee, to submit a report to the Conference on the outcome of the negotiations, as well as on possible future steps in the field of climate change.

DRAFT PROVISIONAL AGENDA

4. The draft provisional agenda will need to contain a number of standard items dealing with the opening of the Conference, the election of officers, the adoption of rules of procedure, the adoption of the agenda, the appointment of a Credentials Committee and the adoption of the report of the Conference. In terms of substance, it must anticipate and project the potential outputs of the Conference. The Secretary-General of the Conference has presented suggestions in this regard and these have been discussed by the Preparatory Committee and broadly endorsed by it. These outputs are expected to be:

(a) An "Earth Charter";

(b) A Programme of Action for "Agenda 21";

(c) Decisions on financial resources;

(d) Decisions on technology transfer issues;

(e) Decisions on institutional development;

(f) The signing of Conventions negotiated outside the Preparatory Committee framework.

5. The draft provisional agenda will also need to reflect the substantive issues before the Conference as they have been considered and developed by the Preparatory Committee in its own agenda. Bearing in mind the importance of continuity, it would seem to be impractical to expect States, which have become accustomed to negotiating issues in a particular format and addressing issues in particular clusters, to be presented at the Conference with an entirely different approach. Based on these considerations, the draft provisional agenda might consist of the following items:

1. Opening of the Conference.

2. Election of the President.

3. Adoption of the rules of procedure.

4. Adoption of the agenda.

5. Election of officers other than the President.

6. Organization of work, including establishment of the Main Committees of the Conference.

7. Credentials of representatives to the Conference:

   (a) Appointment of the members of the Credentials Committee;

   (b) Report of the Credentials Committee.

8. General debate.

9. Adoption of the Earth Charter.

10. Adoption of the Programme of Action for Agenda 21. 1/

11. Financial resources.

12. Transfer of technology.

1/ Sub-items will subsequently be listed under item 10 in the light of the decisions of the Preparatory Committee concerning the content of "Agenda 21".

13. Institutional development.

14. Adoption of conventions.

15. Adoption of the report of the Conference.

ORGANIZATION OF WORK

6. The Preparatory Committee will need to make recommendations to the General Assembly on a number of issues concerning the organization of work of the Conference. These issues are:

(a) Arrangements for pre-session consultations;

(b) General Committee;

(c) Organization of the general debate;

(d) Establishment and organization of the Main Committees;

(e) Participation at the Conference;

(f) Special arrangements for the participation of heads of State or Government.

7. Arrangements for pre-session consultations. In accordance with established practice followed for all United Nations special conferences, it is proposed that pre-session consultations be held on the week-end preceding the Conference in order to reach final agreement on recommendations to be made on all procedural and organizational matters to be dealt with at the Conference on the opening day. These matters include the election of officers, the composition and distribution of posts on the Bureau among the regional groups, the adoption of the rules of procedure, the adoption of the agenda and organization of work, the appointment of members of the Credentials Committee and arrangements for the preparation of the report of the Conference. Consequently, it is suggested that pre-session consultations be held in Rio de Janeiro on 30 and 31 May.

8. General Committee. The Conference will need to elect a President, a number of Vice-Presidents, a Rapporteur-General and the Chairmen of the Main Committees. Together, these officers of the Conference will comprise the General Committee. The General Committee will meet during the Conference as needed to review the progress of work and to coordinate activities. In this connection, it may be noted that it is customary that the host Government provides the President of the Conference. With regard to the composition of the rest of the General Committee, it is suggested that the basic pattern adopted for the Preparatory Committee, which appears to have proved to be satisfactory, should be followed. There would thus be five senior posts at the Conference to be distributed among the five regional groups, namely,

the President, the Rapporteur-General and the three Chairmen of the Main Committees (see para.10 below) and 39 Vice-Presidents distributed on the following basis:

African States	11
Asian States	9
Eastern European States	4
Latin American and Caribbean States	8
Western European and Other States	7

9. Organization of the general debate. Arrangements for the general debate will need to take account of the expected presence of a large number of heads of State or Government, as well as Ministers of Government. Executive heads of United Nations specialized agencies, organizations and programmes, observers and spokespersons for constituencies of the non-governmental organizations will also wish to speak. It is proposed that statements by heads of State or Government be made in the second week, with all other statements made in the first week. No delegation would be allowed to speak more than once in the general debate. A time-limit of 15 minutes is suggested for statements by representatives of Government and 10 minutes for all other statements. The general debate would take place during the first eight working days of the Conference, i.e., between 1 and 10 June.

10. Establishment and organization of the Main Committees. On the basis of the draft provisional agenda proposed above, the substantive items of the Conference should be allocated for consideration to a number of Main Committees established for that purpose. Main Committee I could consider items 9, 13 and 14, Main Committee II item 10 and Main Committee III items 11 and 12. The Main Committees would need to complete their work no later than the evening of Tuesday, 9 June, in order to allow time for their reports to be prepared for presentation to the Plenary.

11. Participation at the Conference. In paragraph 7 of its resolution 45/211, the General Assembly invited the Secretary-General of the United Nations to invite various categories of participants to the Conference. In part II, paragraph 12, of its resolution 44/228, the General Assembly requested relevant non-governmental organizations in consultative status with the Economic and Social Council to contribute to the Conference, as appropriate. In paragraph 13 of its resolution 45/211, the Assembly authorized the Preparatory Committee, without prejudice to the provisions of Assembly resolution 44/228, to continue to apply, for the purpose of the preparatory process, the provisional arrangements agreed upon in decision 1/1 of the Preparatory Committee concerning the participation of non-governmental organizations in the preparatory process. Subsequently, the Preparatory Committee agreed on arrangements for the participation of non-governmental organizations in its work (see decisions 2/1 and 2/2) and, in decision 2/4, approved the granting of observer status to a number of intergovernmental organizations that do not have that status with the General Assembly. In the interests of consistency, Governments may wish to agree on similar arrangements for the Conference. In this event, the Preparatory Committee may wish to recommend that all intergovernmental and non-governmental organizations invited to participate in the Preparatory Committee receive invitations to participate at the Conference.

12. Special arrangements for the participation of heads of State or Government. Following a recommendation of the Preparatory Committee, the General Assembly has urged that representation at the Conference be at the level of head of State or Government. It is therefore essential that the structure of the Conference provide a suitable opportunity for the heads of State or Government to make major statements on behalf of their countries and also to participate collectively in an affirmation of their combined commitment to the objectives of the Conference.

13. In paragraph 9 above, proposals have been made concerning the participation of heads of State or Government in the general debate. Another major issue that has to be decided is the timing of a "special event" for heads of State or Government. This could be held at the beginning of the Conference, in the middle on Environment Day (i.e., 5 June), or at the end as the culmination of the process. On a balance of considerations, and keeping in mind, in particular, the need to end the Conference on a high note, it would perhaps be preferable to schedule the "special event" for heads of State or Government at the end of the Conference. The "special event" could take place on Thursday, 11 June. It could take the form of a "round table", limited to heads of State or Government, which would be designed to encourage an interaction between the heads of State or Government rather than the delivery of set speeches. On that day neither the Plenary nor any other Committee would be in session. The theme and the structure of this "round table" would need to be discussed by the Preparatory Committee. The last day of the Conference would be devoted to a plenary session, again with special emphasis on heads of State or Government, for approving the final text of the outputs of the Conference and for a major "signing ceremony" of the Earth Charter and other final acts of the Conference. Conventions could be signed at this ceremony, or a separate ceremony could be held for that purpose.

14. Draft provisional rules of procedure of the Conference. The draft provisional rules of procedure set out below are based on the rules of procedure used for various recent United Nations conferences. It should be noted, however, that while almost all of these rules are standard, some variations do occur between rules adopted for different conferences.

DRAFT PROVISIONAL RULES OF PROCEDURE

I. REPRESENTATION AND CREDENTIALS

Composition of delegations

Rule 1

The delegation of each State participating in the Conference shall consist of a head of delegation and such other representatives, alternate representatives and advisers as may be required.

Alternates and advisers

Rule 2

The head of delegation may designate an alternate representative or an adviser to act as a representative.

Submission of credentials

Rule 3

The credentials of representatives and the names of alternate representatives and advisers shall be submitted to the Secretary-General of the Conference, if possible not less than one week before the date fixed for the opening of the Conference. The credentials shall be issued either by the Head of the State or Government or by the Minister for Foreign Affairs.

Credentials Committee

Rule 4

A Credentials Committee of nine members shall be appointed at the beginning of the Conference. Its composition shall be based on that of the Credentials Committee of the General Assembly of the United Nations at its forty-sixth session. It shall examine the credentials of representatives and report to the Conference without delay

Provisional participation in the Conference

Rule 5

Pending a decision of the Conference upon their credentials, representatives shall be entitled to participate provisionally in the Conference.

II. OFFICERS

Elections

Rule 6

The Conference shall elect from among the representatives of participating States the following officers: a President, (...) Vice-Presidents and a Rapporteur-General, as well as a Chairman for each of the Main Committees established in accordance with rule 46. These officers shall be elected on the basis of ensuring the representative character of the General Committee. The Conference may also elect such other officers as it deems necessary for the performance of its functions.

General powers of the President

Rule 7

1. In addition to exercising the powers conferred upon him elsewhere by these rules, the President shall preside at the plenary meetings of the Conference, declare the opening and closing of each meeting, put questions to the vote and announce decisions. The President shall rule on points of order and, subject to these rules, shall have complete control of the proceedings and over the maintenance of order thereat. The President may propose to the Conference the closure of the list of speakers, a limitation on the time to be allowed to speakers and on the number of times each representative may speak on a question, the adjournment or closure of the debate and the suspension or the adjournment of a meeting.

2. The President, in the exercise of his function, remains under the authority of the Conference.

Acting President

Rule 8

1. If the President is absent from a meeting or any part thereof, he shall designate one of the Vice-Presidents to take his place.

2. A Vice-President acting as President shall have the same powers and duties as the President.

Replacement of the President

Rule 9

If the President is unable to perform his functions, a new President shall be elected.

Voting rights of the President

Rule 10

The President, or a Vice-President acting as President, shall not vote in the Conference, but may appoint another member of his delegation to vote in his place.

III. GENERAL COMMITTEE

Composition

Rule 11

The President, the Vice-Presidents, the Rapporteur-General and the Chairmen of the Main Committees shall constitute the General Committee. The President, or in his absence one of the Vice-Presidents designated by him, shall serve as Chairman of the General Committee. The Chairman of the

Credentials Committee and other committees established by the Conference in accordance with rule 48 may participate, without the right to vote, in the General Committee.

Substitute members

Rule 12

If the President or a Vice-President of the Conference is to be absent during a meeting of the General Committee, he may designate a member of his delegation to sit and vote in the Committee. In case of absence, the Chairman of a Main Committee shall designate the Vice-Chairman of that Committee as his substitute. When serving on the General Committee, the Vice-Chairman of a Main Committee shall not have the right to vote if he is of the same delegation as another member of the General Committee.

Functions

Rule 13

The General Committee shall assist the President in the general conduct of the business of the Conference and, subject to the decisions of the Conference, shall ensure the coordination of its work.

IV. SECRETARIAT OF THE CONFERENCE

Duties of the Secretary-General of the Conference

Rule 14

1. The Secretary-General of the Conference shall act in that capacity in all meetings of the Conference and its subsidiary organs.

2. The Secretary-General of the Conference may designate a member of the secretariat to act in his place at these meetings.

3. The Secretary-General of the Conference shall direct the staff required by the Conference.

Duties of the secretariat

Rule 15

The secretariat of the Conference shall, in accordance with these rules:

(a) Interpret speeches made at meetings;

(b) Receive, translate, reproduce and circulate the documents of the Conference;

(c) Publish and circulate the official documents of the Conference;

(d) Prepare and circulate records of public meetings;

(e) Make and arrange for the keeping of sound recordings and provide summary records of meetings;

(f) Arrange for the custody and preservation of the documents of the Conference in the archives of the United Nations;

(g) Generally perform all other work that the Conference may require.

Statements by the secretariat

Rule 16

The Secretary-General of the United Nations, the Secretary-General of the Conference, or any member of the secretariat designated by either for that purpose, may, at any time, make other oral or written statements concerning any question under consideration.

V. OPENING OF THE CONFERENCE

Temporary President

Rule 17

The Secretary-General of the United Nations or, in his absence, the Secretary-General of the Conference, shall open the first meeting of the Conference and preside until the Conference has elected its President.

Decisions concerning organization

Rule 18

The Conference shall at its first meeting:

(a) Adopt its rules of procedure;

(b) Elect its officers and constitute its subsidiary organs;

(c) Adopt its agenda, the draft of which shall, until such adoption, be the provisional agenda of the Conference;

(d) Decide on the organization of its work.

VI. CONDUCT OF BUSINESS

Quorum

Rule 19

The President may declare a meeting open and permit the debate to proceed when at least one third of the representatives of the States participating in the Conference are present. The presence of representatives of a majority of the States so participating shall be required for any decision to be taken.

Speeches

Rule 20

1. No one may address the Conference without having previously obtained the permission of the President. Subject to rules 21, 22 and 25 to 27, the President shall call upon speakers in the order in which they signify their desire to speak. The secretariat shall be in charge of drawing up a list of speakers.

2. Debate shall be confined to the question before the Conference and the President may call a speaker to order if his remarks are not relevant to the subject under discussion.

3. The Conference may limit the time allowed to each speaker and the number of times each participant may speak on any question. Permission to speak on a motion to set such limits shall be accorded only to two representatives in favour of and to two opposing such limits, after which the motion shall be immediately put to the vote. In any event, with the consent of the Conference, the President shall limit each intervention on procedural matters to five minutes. When the debate is limited and a speaker exceeds the allotted time, the President shall call him to order without delay.

Points of order

Rule 21

During the discussion of any matter, a representative may at any time raise a point of order, which shall be immediately decided by the President in accordance with these rules. A representative may appeal against the ruling of the President. The appeal shall be immediately put to the vote, and the President's ruling shall stand unless overruled by a majority of the representatives present and voting. A representative may not, in raising a point of order, speak on the substance of the matter under discussion.

Precedence

Rule 22

The Chairman or Rapporteur of a Main Committee, or the representative of a subcommittee or working group may be accorded precedence for the purpose of explaining the conclusions arrived at by the body concerned.

Closing of the list of speakers

Rule 23

During the course of a debate, the President may announce the list of speakers and, with the consent of the Conference, declare the list closed.

Right of reply

Rule 24

1. Notwithstanding rule 23, the President shall accord the right of reply to a representative of any State participating in the Conference who requests it. Any other representative may be granted the opportunity to make a reply.

2. The statements made under this rule shall normally be made at the end of the last meeting of the day, or at the conclusion of the consideration of the relevant item if that is sooner.

3. The representatives of a State may make no more than two statements under this rule at a given meeting on any item. The first shall be limited to five minutes and the second to three minutes; representatives shall in any event attempt to be as brief as possible.

Adjournment of debate

Rule 25

A representative may at any time move the adjournment of the debate on the question under discussion. In addition to the proposer of the motion, permission to speak on the motion shall be accorded only to two representatives in favour and to two opposing the adjournment, after which the motion shall, subject to rule 28, be immediately put to the vote.

Closure of debate

Rule 26

A representative may at any time move the closure of the debate on the question under discussion, whether or not any other representative has signified his wish to speak. Permission to speak on the motion shall be accorded only to two representatives opposing the closure, after which the motion shall, subject to rule 28, be immediately put to the vote.

Suspension or adjournment of the meeting

Rule 27

Subject to rule 38, a representative may at any time move the suspension or the adjournment of the meeting. No discussion on such motions shall be permitted and they shall, subject to rule 28, be immediately put to the vote.

Order of motions

Rule 28

The motions indicated below shall have precedence in the following order over all proposals or other motions before the meeting:

(a) to suspend the meeting;

(b) To adjourn the meeting;

(c) To adjourn the debate on the question under discussion;

(d) To close the debate on the question under discussion.

Submission of proposals and substantive amendments

Rule 29

Proposals and substantive amendments shall normally be submitted in writing to the Secretary-General of the Conference, who shall circulate copies to all delegations. Unless the Conference decides otherwise, substantive proposals shall be discussed or put to a decision no earlier than 24 hours after copies have been circulated in all languages of the Conference to all delegations. The President may, however, permit the discussion and consideration of amendments, even though these amendments have not been circulated or have only been circulated the same day.

Withdrawal of proposals and motions

Rule 30

A proposal or a motion may be withdrawn by its sponsor at any time before a decision on it has been taken, provided that it has not been amended. A proposal or a motion thus withdrawn may be reintroduced by any representative.

Decisions on competence

Rule 31

Subject to rule 21, any motion calling for a decision on the competence of the Conference to adopt a proposal submitted to it shall be put to the vote before a decision is taken on the proposal in question.

Reconsideration of proposals

Rule 32

When a proposal has been adopted or rejected, it may not be reconsidered unless the Conference, by a two-thirds majority of the representatives present and voting, so decides. Permission to speak on a motion to reconsider shall be accorded only to two speakers opposing reconsideration, after which the motion shall be immediately put to the vote.

VII. DECISION-MAKING

General agreement

Rule 33

The Conference shall make its best endeavours to ensure that the work of the Conference is accomplished by general agreement.

Voting rights

Rule 34

Each State participating in the Conference shall have one vote.

Majority required

Rule 35

1. Subject to rule 33, decisions of the Conference on all matters of substance shall be taken by a two-thirds majority of the representatives present and voting.

2. Except as otherwise provided in these rules, decisions of the Conference on all matters of procedure shall be taken by a majority of the representatives present and voting.

3. If the question arises whether a matter is one of procedure or of substance, the President of the Conference shall rule on the question. An appeal against this ruling shall be put to the vote immediately, and the President's ruling shall stand unless overruled by a majority of the representatives present and voting.

4. If a vote is equally divided, the proposal or motion shall be regarded as rejected.

Meaning of the phrase "representatives present and voting"

Rule 36

For the purpose of these rules, the phrase "representatives present and voting" means representatives casting an affirmative or negative vote. Representatives who abstain from voting shall be regarded as not voting.

Method of voting

Rule 37

1. Except as provided in rule 44, the Conference shall normally vote by show of hands, except that a representative may request a roll-call, which shall then be taken in the English alphabetical order of the names of the States participating in the Conference, beginning with the delegation whose name is drawn by lot by the President. The name of each State shall be called in all roll-calls, and its representative shall reply "yes", "no" or "abstention".

2. When the Conference votes by mechanical means, a non-recorded vote shall replace a vote by show of hands and a recorded vote shall replace a roll-call. A representative may request a recorded vote, which shall, unless a representative requests otherwise, be taken without calling out the names of the States participating in the Conference.

3. The vote of each State participating in a roll-call or a recorded vote shall be inserted in any record of or report on the meeting.

Conduct during voting

Rule 38

After the President has announced the commencement of voting, no representative shall interrupt the voting, except on a point of order in connection with the process of voting.

Explanation of vote

Rule 39

Representatives may make brief statements consisting solely of explanations of vote, before the voting has commenced or after the voting has been completed. The President may limit the time to be allowed for such explanations. The representative of a State sponsoring a proposal or motion shall not speak in explanation of vote thereon, except if it has been amended.

Division of proposals

Rule 40

A representative may move that parts of a proposal be decided on separately. If a representative objects, the motion for division shall be voted upon. Permission to speak on the motion shall be accorded only to two representatives in favour of and to two opposing the division. If the motion is carried, those parts of the proposal that are subsequently approved shall be put to the Conference for decision as a whole. If all operative parts of the proposal have been rejected, the proposal shall be considered to have been rejected as a whole.

Amendments

Rule 41

A proposal is considered an amendment to another proposal if it merely adds to, deletes from or revises part of that proposal. Unless specified otherwise, the word "proposal" in these rules shall be considered as including amendments.

Order of voting on amendments

Rule 42

When an amendment is moved to a proposal, the amendment shall be voted on first. When two or more amendments are moved to a proposal, the Conference shall vote first on the amendment furthest removed in substance from the

original proposal and then on the amendment next furthest removed therefrom and so on until all the amendments have been put to the vote. Where, however, the adoption of one amendment necessarily implies the rejection of another amendment, the latter shall not be put to the vote. If one or more amendments are adopted, the amended proposal shall then be voted upon.

Order of voting on proposals

Rule 43

1. If two or more proposals, other than amendments, relate to the same question, they shall, unless the Conference decides otherwise, be voted on in the order in which they were submitted. The Conference may, after each vote on a proposal, decide whether to vote on the next proposal.

2. Revised proposals shall be voted on in the order in which the original proposals were submitted, unless the revision substantially departs from the original proposal. In that case, the original proposal shall be considered as withdrawn and the revised proposal shall be treated as a new proposal.

3. A motion requiring that no decision be taken on a proposal shall be put to the vote before a decision is taken on the proposal in question.

Elections

Rule 44

All elections shall be held by secret ballot unless, in the absence of any objection, the Conference decides to proceed without taking a ballot when there is an agreed candidate or State.

Rule 45

1. When one or more elective places are to be filled at one time under the same conditions, those candidates, in a number not exceeding the number of such places, obtaining in the first ballot a majority of the votes cast and the largest number of votes, shall be elected.

2. If the number of candidates obtaining such majority is less than the number of places to be filled, additional ballots shall be held to fill the remaining places.

VIII. SUBSIDIARY BODIES

Main Committees

Rule 46

The Conference may establish Main Committees as required which may set up subcommittees or working groups.

Representation on the Main Committees

Rule 47

Each State participating in the Conference may be represented by one representative on each Main Committee established by the Conference. It may assign to these Committees such alternate representatives and advisers as may be required.

Other committees and working groups

Rule 48

1. In addition to the committees referred to above, the Conference may establish such committees and working groups as it deems necessary for the performance of its functions.

2. Each committee may set up subcommittees and working groups.

Rule 49

1. The members of the committees and working groups of the Conference, referred to in rule 48, paragraph 1, shall be appointed by the President, subject to the approval of the Conference, unless the Conference decides otherwise.

2. Members of the subcommittees and working groups of committees shall be appointed by the Chairman of the committee in question, subject to the approval of that committee, unless the committee decides otherwise.

Officers

Rule 50

Except as otherwise provided in rule 6, each committee, subcommittee and working group shall elect its own officers.

Quorum

Rule 51

1. The Chairman of a Main Committee may declare a meeting open and permit the debate to proceed when representatives of at least one quarter of the States participating in the Conference are present. The presence of representatives of a majority of the States so participating shall be required for any decision to be taken.

2. A majority of the representatives of the General or Credentials Committee or of any committee, subcommittee or working group shall constitute a quorum.

Officers, conduct of business and voting

Rule 52

The rules contained in chapters II, VI (except rule 19) and VII above shall be applicable, mutatis mutandis, to the proceedings of committees, subcommittees and working groups, except that:

(a) The Chairmen of the General and Credentials Committees and the chairmen of the committees, subcommittees and working groups may exercise the right to vote,

(b) Decisions of committees, subcommittees and working groups shall be taken by a majority of the representatives present and voting, except that the reconsideration of a proposal or an amendment shall require the majority established by rule 32.

IX. LANGUAGES AND RECORDS

Languages of the Conference

Rule 53

Arabic, Chinese, English, French, Russian and Spanish shall be the languages of the Conference.

Interpretation

Rule 54

1. Speeches made in a language of the Conference shall be interpreted into the other such languages.

2. A representative may speak in a language other than a language of the Conference if the delegation concerned provides for interpretation into one such language.

Languages of official documents

Rule 55

Official documents of the Conference shall be made available in the languages of the Conference.

Sound recordings of meetings

Rule 56

Sound recordings of meetings of the Conference and of any Main Committee shall be made and kept in accordance with the practice of the United Nations. Unless otherwise decided by the Conference or the Main Committee concerned, no such recordings shall be made of the meetings of any working group thereof.

X. PUBLIC AND PRIVATE MEETINGS

General principles

Rule 57

The plenary meetings of the Conference and the meetings of any committee shall be held in public unless the body concerned decides otherwise. All decisions taken by the plenary of the Conference at a private meeting shall be announced at an early public meeting of the Plenary.

Rule 58

As a general rule, meetings of the General Committee, subcommittees or working groups shall be held in private.

Communiques on private meetings

Rule 59

At the close of a private meeting, the presiding officer of the organ concerned may issue a communique through the Secretary-General of the Conference.

XI. OTHER PARTICIPANTS AND OBSERVERS

Representatives of organizations that have received a standing invitation from the General Assembly to participate in the capacity of observers in the sessions and work of all international conferences convened under its auspices

Rule 60

Representatives designated by organizations that have received a standing invitation from the General Assembly to participate in the sessions and work of all international conferences convened under its auspices, have the right to participate as observers, without the right to vote, in the deliberations of the Conference, any Main Committee and, as appropriate, any other committee or working group.

Representatives of national liberation movements

Rule 61

Representatives designated by national liberation movements invited to the Conference may participate as observers, without the right to vote, in the deliberations of the Conference, any Main Committee and, as appropriate, any other committee or working group on any matter of particular concern to those movements.

Representatives of the specialized agencies 1/

Rule 62

Representatives designated by the specialized agencies may participate, without the right to vote, in the deliberations of the Conference, any Main Committee and, as appropriate, any other committee or working group on questions within the scope of their activities.

Representatives of other intergovernmental organizations

Rule 63

Representatives designated by other intergovernmental organizations invited to the Conference may participate as observers, without the right to vote, in the deliberations of the Conference, any Main Committee and, as appropriate, any other committee or working group on questions within the scope of their activities.

Representatives of interested United Nations organs

Rule 64

Representatives designated by interested organs of the United Nations may participate as observers, without the right to vote, in the deliberations of the Conference, any Main Committee and, as appropriate, any other committee or working group on questions within the scope of their activities.

Representatives of non-governmental organizations

Rule 65

1. Non-governmental organizations invited to the Conference may designate representatives to sit as observers at public meetings of the Conference and any Main Committee.

2. Upon the invitation of the presiding officer of the conference body concerned and subject to the approval of that body, such observers may make oral statements on questions in which they have special competence.

Written statements

Rule 66

Written statements submitted by the designated representatives referred to in rules 60 to 65 shall be distributed by the secretariat to all delegations in the quantities and in the language in which the statements are

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1/ For the purpose of these rules, the term "specialized agencies" includes the International Atomic Energy Agency and the General Agreement on Tariffs and Trade.

made available to it at the site of the Conference, provided that a statement submitted on behalf of a non-governmental organization is related to the work of the Conference and is on a subject in which the organization has a special competence.

XII. SUSPENSION AND AMENDMENT OF THE RULES OF PROCEDURE

Method of suspension

Rule 67

Any of these rules may be suspended by the Conference provided that 24 hours' notice of the proposal for the suspension has been given, which may be waived if no representative objects. Any such suspension shall be limited to a specific and stated purpose and to a period required to achieve that purpose.

Method of amendment

Rule 68

These rules of procedure may be amended by a decision of the Conference taken by a two-thirds majority of the representatives present and voting, after the General Committee has reported on the proposed amendment.

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PROTECTION OF THE ATMOSPHERE: CLIMATE CHANGE

Report of the Secretary-General of the Conference

INTRODUCTION

1. This paper was prepared by the Secretariat in response to Decision 2/8 of the Preparatory Committee at its second session, in which the Secretary General was requested "(c)...to continue his efforts to follow the work to estimate the cost, in particular to developing countries, of adopting measures to limit possible climate change..." and "(e)...to continue to monitor the major intergovernmental activities in the area of atmosphere and climate change, and to prepare a report that analyses and summarizes those activities and offers suggestions thereon".

2. Four major ongoing processes need to be reported on: the second session of the Intergovernmental Negotiating Committee for a Framework Convention on Climate Change (INC); the Intergovernmental Panel on Climate Change (IPCC); the World Meteorological Congress, and the UNEP Governing Council. In addition, a brief report is made on progress in the area of costing studies, especially for developing countries.

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3. This report is mainly for the information of the UNCED Preparatory Committee. The Secretary-General of the Conference will continue to liaise with the intergovernmental processes mentioned in this paper, to ensure that their results are reflected in the work prepared by UNCED, and in particular in Agenda 21.

INTERGOVERNMENTAL NEGOTIATING COMMITTEE (INC)

4. The INC had its second session in Geneva on 19-28 June. Consequently, it has not been possible to include in this report the substantive outcome of this meeting. Nevertheless, a number of points related to the INC need to be reported to the Preparatory Committee.

5. In accordance with the INC's decision 1/1 (annex, paras. 5 and 6), Working Group I of the INC will prepare a draft text for consideration by the plenary related to:

"(a) Appropriate commitments, beyond those required by existing agreements, for limiting and reducing net emissions of carbon dioxide and other greenhouse gases, on the protection, enhancement and increase of sinks and reservoirs, and in support of measures to counter the adverse effects of climate change, taking into account that contributions should be equitably differentiated according to countries' responsibilities and their level of development;

(b) Appropriate commitments on adequate and additional financial resources to enable developing countries to meet incremental costs required to fulfil the commitments referred to above and to facilitate the transfer of technology expeditiously on a fair and most favourable basis;

(c) Commitments addressing the special situation of developing countries, taking into account their development needs, including, inter alia, the problems of small island developing countries, low-lying coastal areas and areas threatened by erosion, flooding, desertification and high urban atmospheric pollution; also taking into account the problems of economies in transition."

6. In accordance with Committee decision 1/1 (annex, paras. 5 and 7), Working Group II will prepare a draft text for consideration by the plenary related to:

"(a) Legal and institutional mechanisms, including, inter alia, entry into force, withdrawal, compliance and assessment and review;

(b) Legal and institutional mechanisms related to scientific cooperation, monitoring and information;

(c) Legal and institutional mechanisms related to adequate and additional financial resources and technological needs and cooperation, and technology transfer to developing countries corresponding to the commitments agreed to in Working Group I."

7. In accordance with Committee decision 1/1 (annex, para. 2), the work of the Working Groups must be interrelated and will be integrated by the plenary. To this end, the two Working Groups will report regularly to the plenary on progress made. In this context, paragraph 10 of the annex to the same decision foresees the need for harmonizing the drafting done by the Working Groups.

8. Following the decision 2/8 of the UNCED Preparatory Committee, the UNCED Secretary General submitted the relevant documents to the INC.

9. A number of meetings were arranged between the staff of the secretariats of the INC and of the UNCED, to ensure full coordination of the work of the secretariats. The Executive Secretary of the INC was asked to become member of UNCED's Atmosphere Working Party. Consequently, the preparation of substantive papers related to Atmosphere were considerably assisted by the Secretariat of the INC.

10. Furthermore, to ensure easy and rapid access to the information generated by the INC, starting with the 2nd session of the INC, all the information produced there has also been accessible on the APC networks, through the UNCED Global Electronic Network.

11. We expect that the period between the third and the fourth sessions of the UNCED Preparatory Committee will be particularly important in so far as INC and UNCED cooperation is concerned.

12. The next session of the INC will be held in Nairobi, on 9-20 September 1991, shortly after the completion of the third session of UNCED's Preparatory Committee. An additional session of the INC is planned for 9-20 December 1991, in Geneva, which will happen just in time to ensure that any possible decisions taken there can still be included in the official reports prepared for UNCED's fourth session, to be held in March 1992.

INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE (IPCC)

13. The IPCC, at its fifth session, in Geneva (13-15 March 1991) adopted a workplan for 1991 and beyond. The Panel agreed to continue to concentrate its activities on tasks allotted to it by the relevant WMO Executive Council and UNEP Governing Council resolutions and decisions. At the same time, the Panel expressed its readiness to respond to the needs and requests of the INC.

14. The main elements of the workplan adopted by the IPCC include:

* Assessment of national net greenhouse gas emissions

  - Sources and sinks
  - Global Warming Potentials (GWPs)
  - Emission Scenarios

* Predictions of the regional distributions of climate change and associated impact studies, including model validation studies.

  - Update of regional climate models
  - Analysis of sensitivity to regional climate change

* Issues related to energy and industry (i.e., all end-use sectors, as well as energy production, transmission)

  - Technological assessments
  - Thematic assessments
  - Country studies

* Forestry-related Issues

  - Management practices
  - Assessment and evaluation of adaptation measures

* Vulnerability to Sea-level Rise

* Emission Scenarios

* Selected Studies of the Economic Implications of Climate Change

15. The IPCC will have two additional plenary sessions before the UNCED. The sixth session of the IPCC will be held in Geneva or in Nairobi on 29-31 October 1991, while the seventh session will be in February 1992.

WORLD METEOROLOGICAL CONGRESS

16. The 11th World Meteorological Congress (WMC) took place in Geneva, in May 1991. The WMC took a number of decisions on issues related to the INC and to the IPCC.

17. In particular, the WMC authorized the Secretary-General of the World Meteorological Organization (WMO) to support the negotiating process for a framework convention on climate change, within available resources, including through the provision of staff, space in WMO's premises, and of any relevant information.

18. The WMC also approved the IPCC's plans for the future. It also approved the close cooperation of the IPCC with the Executive Secretary of the INC to ensure that the Panel could respond to requests for technical advice during the negotiating process for a framework convention.

UNEP GOVERNING COUNCIL

19. The sixteenth session of UNEP's Governing Council took place in Nairobi, in May 1991. The GC also took a number of decisions relevant to intergovernmental work on climate change.

20. In particular, the GC authorized the Executive Director of UNEP to support the negotiating process for a framework convention on climate change, including through the provision of funds, staff, and of any relevant information.

COSTING EXERCISES

21. UNEP has just initiated a new project, to be implemented by the UNEP Collaborating Center on energy and the Environment at the Riso National Laboratories in Denmark, in collaboration with the Royal Institute of International Affairs (UK), and the Stockholm Environment Institute. The purpose of this project will be to initiate concrete country studies, initially four in developing and four in industrialized countries, to evaluate the costs involved in responding to climate change.

22. The Secretariat of UNCED has kept in touch with the New Delhi-based Asian Energy Institute, which is undertaking an 11-country-wide study of the costs of greenhouse gas limitation strategies. The results of the study are expected to be available before the end of 1991, and consequently will be made available for the fourth session of the UNCED Preparatory Committee.

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PROTECTION OF THE ATMOSPHERE: OZONE DEPLETION

Report of the Secretary-General of the Conference

I. INTRODUCTION

1. This report was prepared in response to decision 1/12 of the first session of the Preparatory Committee for the United Nations Conference on Environment and Development, requesting the UNCED secretariat to co-operate with the United Nations Environment Programme (UNEP) and the World Meteorological Organization (WMO) in evaluating the need for any additional action to be taken by the Preparatory Committee to support the ongoing work within the framework of the Vienna Convention and the Montreal Protocol; and requesting the Secretary-General of the Conference to report on that question to the Preparatory Committee at its third session (A/45/46, Annex I). The Preparatory Committee also requested the Secretary-General of the Conference, in co-operation with UNEP, to report to the Preparatory Committee on the effectiveness of the implementation of the provisions relating to financial co-operation and transfer of technology to developing countries of the Montreal Protocol, as amended by the second meeting of the Parties to the Protocol in 1990.

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2. Preparation of this report benefited from contributions and comments received from the UNEP and WMO secretariats as well as from independent experts participating in the UNCED Working Party on the Atmosphere. The report takes into account the decisions of the second meeting of the Conference of the Parties to the Vienna Convention for the Protection of the Ozone Layer (Nairobi, 17-19 June 1991) and of the third meeting of the Parties to the Montreal Protocol on Substances That Deplete the Ozone Layer (Nairobi, 19 to 21 June 1991).

3. Pending a detailed discussion of the topic of ozone depletion at the third session of the Preparatory Committee, the cross-sectoral linkages and specific options for action arising from the present document remain to be integrated in the overview document on "Protection of the atmosphere: options for agenda 21" (A/CONF.151/PC/42/Add.1).

II. BACKGROUND

Recent scientific findings

4. The first meeting of ozone research managers of the Parties to the Vienna Convention for the Protection of the Ozone Layer (Geneva, 13-15 March 1991) summarized the current status of scientific understanding of the stratospheric ozone issue as follows:

(a) Analysis of data over the past twelve months has provided further support for the conclusion that the "ozone hole" appearing during the Antarctic spring season is the result of chemical ozone destruction by reactive chlorine and bromine from man-made chlorofluorocarbons (CFCs) and halons.

(b) In 1990, the Antarctic springtime depletion of the ozone layer was as severe as in 1987 and 1989. A noticeable feature in 1990 was the extraordinary persistence of the southern polar vortex and the region of depleted ozone within; the ozone hole did not disappear until late December, after the summer solstice.

(c) The late break-up of the south polar vortex raises the question of a possible link between ozone depletion and changes in the atmospheric dynamics of the southern hemisphere due to changes in the radiative properties of the stratosphere; but no definitive statement can be made at this time. Similarly no definite statement can be made concerning the implication for marine surface biota in the southern ocean of the enhanced UV-B fluxes resulting from ozone depletion.

(d) Transport of ozone-depleted air from Antarctica to other parts of the southern hemisphere has been observed for short periods in the late spring and summer.

(e) Measurements in the Arctic have shown that stratospheric composition is highly perturbed in late winter. The unexpectedly large amounts or reactive chlorine reflect a potential for large ozone depletion. There are indications of local ozone depletion during short time periods which may be related to chlorine.

(f) Provisional results from a new analysis of the past 12 years of satellite data indicate that total ozone between 65/N and 65/S has been decreasing at an average rate of about 3% per decade, after correction for known natural influences on ozone.

(g) Analysis of both ground-based and satellite data for the northern hemisphere indicates ozone decline during the winter season at all latitudes north of 20/N, with depletions up to 8% in the most northern latitudes over the past 12 years. At the mid-latitudinal belt (30-50/N), significant reductions (4-5%) of the long term average total ozone have occurred during the same period and, perhaps more significantly, there is a stronger reduction in spring when the growing season is in progress. In the southern hemisphere during the past 12 years, the depletion was about 3-6% at the 30-50/S latitudinal belt and much stronger polarward.

(h) Analysis of the ozone record clearly shows that the decreases which have occurred over the past 10 years are larger than the trends in previous decades. There is a strong ozone decline about 0.5% per year in the lower stratosphere of the middle and northern latitudes which is not to be explained by the current gas-phase models.

(i) All the reported downward trends in ozone, which have been confirmed by several independent analyses of the data, are substantially greater than the predicted decrease from classical, gas-phase, state-of-the-art atmospheric models. For example, in the northern hemisphere the model-predicted depletions are lower by a factor of 2 to 3 than those observed, depending on altitude, latitude and season.

(j) There are major limitations in current models due to their inability to represent satisfactorily the heterogeneous chemistry that is believed to be involved in rapid ozone depletion by chlorine. This probably accounts, at least in part, for the discrepancy between modelled and observed ozone changes.

(k) The total amount of chlorine compounds in the atmosphere ("chlorine loading") has continued to rise and will continue to do so until there is at least 90% compliance with the phase-out of CFCs and other halogenated molecules stipulated by the revised Montreal Protocol.

(l) After phase-out of CFC production in accordance with the Montreal Protocol, chlorine loading will continue to rise due to release of "banked" material (in storage and contained applications), leading to a peak between 2000 and 2010. Thereafter chlorine loading will decay at a rate depending on the amount and nature of substitute compounds that are used. There is a similar problem with bromine compounds.

(m) In order to return to a chlorine loading of 2 ppb ("pre-Antarctic ozone hole" levels) by 2050, all production of short-lived chlorine-containing halocarbons will need to be phased out by 2030 at the latest. It follows that any substitution of CFCs by HCFCs (listed as "transitional substances" under Annex C of the London amendments to the Montreal Protocol) will have to be moderate and temporary, if this goal is indeed to be achieved by the year 2050.

(n) The development of supersonic civil air transport is being re-considered in several countries. An updated assessment of the impact of the exhaust emissions (mainly nitrogen oxides) from a fleet of such aircraft, as well as from rockets and multiple-use space vehicles, confirms earlier prognoses that significant depletion of stratospheric ozone may occur. The degree of depletion predicted by the models is critically dependent on the altitude of pollutant injection.

5. Much of our current knowledge of world-wide trends in ozone concentration and depletion is based on data gathered by the Global Ozone Observing System (GO_3OS) operated by WMO as part of its Global Atmosphere Watch and as input to the UNEP Global Environment Monitoring System. The GO_3OS network of 140 ground-based stations, supplemented by satellite observations, needs to be expanded, especially for monitoring of ultraviolet (UV-B) radiation and for background monitoring of tropospheric ozone in developing countries (in the tropical belt and the southern hemisphere in particular) and in the Arctic.

Assessments

6. In accordance with article 6 of the Montreal Protocol on Substances that Deplete the Ozone Layer, comprehensive assessments of the available scientific information, environmental effects and technological/economic implications of stratospheric ozone depletion are currently being prepared for the fourth meeting of the Parties to the Protocol, scheduled to be held in Denmark in September/October 1992. These assessments, their executive summaries, and a synthesis report will be available to Governments by 1 January 1992. A concise summary of the key conclusions from the earlier assessments completed in July 1989, together with information on recent scientific and technological advances, was prepared for the Nairobi meeting of Parties to the Vienna Convention for the Protection of the Ozone Layer in June 1991 (R.T. Watson, Ozone Depletion: Draft Issues Paper, UNEP/OzL.Conv.2/Inf.2).

III. BASIS FOR INTERNATIONAL ACTION

7. The Vienna Convention for the Protection of the Ozone Layer was signed in March 1985 and entered into force in September 1988. As of 5 June 1991, 76 States and the European Economic Community (EEC) had become Parties to the Convention. The Bureau of the Conference of Parties to the Convention met in Geneva in March 1991, in conjunction with a meeting of ozone research managers jointly organized by UNEP and WMO, which reviewed ongoing monitoring and research programmes and made recommendations for future work.

8. Within the framework of the Vienna Convention, the Montreal Protocol on Substances That Deplete the Ozone Layer was signed in September 1987 and entered into force in January 1989. As of 5 June 1991, 70 States and the EEC had become Parties to the Protocol. A number of adjustments and amendments were adopted at the second meeting of the Parties to the Protocol, held in London in June 1990. While the adjustments automatically entered into force in March 1991, the amendments are subject to ratification by at least 20 Parties and are expected to enter into force in 1992.

9. The Vienna Convention and its Montreal Protocol were designed as dynamic and flexible instruments capable of evolving and adjusting in the light of new scientific/technological information by means of periodic international assessments, and with built-in compliance controls through data reporting and monitoring of national implementation. Over the past six months, meetings were held of the following subsidiary bodies established under the Montreal Protocol:

- Bureau (first meeting, Nairobi, 14-15 March 1991; second meeting, Nairobi, 19 June 1991);

- Open-ended Working Group (fifth meeting, on trade and product controls; Nairobi, 3-5 December 1990);

- Ad-hoc Group of Experts on Data Reporting (first meeting, Nairobi, 6-7 December 1990);

- Technology and Economics Assessment Panel (organizational meeting, Washington/D.C., 17-18 January 1991);

- Scientific Assessment Panel (organizational meeting, Washington/D.C., 8-9 April 1991);

- Ad-hoc Working Group of Legal Experts on Non-compliance (second meeting, Geneva, 8-10 April 1991)

- Implementation Committee under the Non-compliance Procedure (first meeting, Nairobi, 10-11 December 1990; second meeting, Geneva, 11-13 April 1991).

10. Furthermore, the 1990 London meeting of Parties to the Montreal Protocol established an Interim Multilateral Ozone Fund, supervised by an Executive Committee consisting of seven members from developing countries and seven members from developed countries, with the offices of chairman and vice-chairman rotating annually between the two groups. The Executive Committee has held four meetings to date (Montreal, 19-21 September 1990, 17-19 December 1990, 15-19 April 1991; and Nairobi, 17-18 June 1991).

IV. IMPLEMENTATION OF PROVISIONS RELATING TO FINANCING AND TECHNOLOGY TRANSFER

11. By decision 1/12(c), the Preparatory Committee specifically requested information on the effectiveness of the implementation of the provisions of the Montreal Protocol (as amended at London in 1990) relating to financial co-operation and transfer of technology to developing countries. A report by the Executive Director of UNEP to the Parties to the Montreal Protocol (UNEP/OzL.Pro.3/3 and Add.1) deals with the overall status of the implementation of decisions taken at the London Meeting and subsequent developments up to 14 April 1991. The Executive Committee of the Interim Multilateral Fund for the Implementation of the Montreal Protocol reported to the Parties (UNEP/OzL.Pro/ExCom/4/12/Rev.1, as amended) on progress in the implementation of decisions relating to the Fund. Further relevant information is contained in the budgetary documents as approved by the third meeting of the Parties to the Protocol.

Financial co-operation to facilitate participation

12. In accordance with article 4, paragraph 2, of the Vienna Convention and article 10 of the Montreal Protocol, the Parties have agreed to provide technical assistance to developing countries to facilitate participation in the Protocol. According to information from the UNEP secretariat (UNEP/OzL.Conv.2/4 and UNEP/OzL.Pro.3/9), the cost of the participation of representatives from developing countries in meetings convened under the Vienna Convention and the Montreal Protocol for 1991 was estimated at a total of US$ 820,000, which were met from the following sources: the Vienna Convention Trust Fund, the Montreal Protocol Trust Fund, the Finnish Ozone Trust Fund, and counterpart contributions.

13. The 1992-1993 budget approved by the third meeting of the Parties to the Montreal Protocol includes total estimated costs of participation of representatives of developing countries amounting to US$ 480,000 for 1992, and US$ 576,000 for 1993. It was pointed out that the status of agreed contributions by Parties towards the Vienna and Montreal Trust Funds showed substantial arrears and that the continued participation of representatives from developing countries, especially in the assessment panel meetings scheduled, was crucially dependent on timely payment of outstanding contributions.

Financial co-operation for operational activities

14. The Interim Multilateral Ozone Fund was set up by the Parties to the Montreal Protocol at their 1990 meeting in London "to enable developing countries to meet the requirements of the present and a future strengthened Protocol, thereby addressing the ozone depletion and related problems". As a result of the recent accession by China, the total budget figure for the initial three-year period of the Fund was raised from US$ 160 million to 200 million by decision of the third meeting of the Parties to the Montreal Protocol, with consequential adjustment of the original scale of contributions. The Fund became operational on 1 January 1991, administered by a secretariat located in Montreal, under over-all guidance by the Executive Committee. Paid contributions as of 13 June 1991 amounted to US$ 12,697,609.

15. The Executive Committee at its fourth meeting (Nairobi, 17-18 June 1991) adopted a three-year budget for Fund operations. On the basis of interagency agreements and approved work programmes concluded with the World Bank, UNEP and UNDP as implementing agencies, the Committee made operational budget allocations for 1991 as follows: US$ 1,676,920 to UNEP; US$ 1,261,800 to UNDP; and US$ 5,000,000 to the World Bank. Possible additional allocations will be considered at the fifth meeting of the Committee, together with the 1992 proposals.

16. The Executive Committee has also approved implementation guidelines and criteria for project selection (UNEP/OzL.Pro/ExCom/3/18,Annex III), on the understanding that the document would be subject to further development after one year in the light of the experience gained. Parties were invited to draw

up country programmes to serve as a basis for project operation and financing from the Fund, for consideration at the fifth meeting of the Executive Committee. In the context of a discussion on the classification of "developing countries", at the third meeting of the Parties to the Montreal Protocol, the Open-ended Working Group of the Parties was requested to study and define criteria for classification, to be considered at the fourth or fifth meeting of the Parties.

17. In this context, it was pointed out that countries not eligible for support from the Multilateral Fund could apply for assistance from the Global Environment Facility (GEF). Following the establishment of the GEF with formal approval by the Board of the World Bank (March 1991), the UNEP Governing Council (May 1991) and the UNDP Governing Council (June 1991), the initial phase of the three-year pilot programme has now begun, under guidance from a tripartite Implementation Committee and a Scientific and Technical Advisory Panel; the first meeting of the Participants in the GEF was held at Washington/D.C. on 1-2 May 1991. As of 31 March 1991, contributions to the "core" Global Environment Trust Fund stood at SDR 599 million, bringing total GEF commitments (i.e., including the Interim Multilateral Ozone Fund, and associated co-financing arrangements) to SDR 935 million. While the bulk of GEF funds will go towards projects in the field of global warming, biodiversity and international waters, approximately $30-50 million of the three-year budget may be expected to be allocated to projects concerning ozone depletion. Several countries not eligible for support from the Interim Multilateral Fund (e.g., Czechoslovakia and Panama) have already indicated their intention to apply for GEF funding; pursuant to an understanding between the World Bank and UNEP, ozone-related project funding will, however, be restricted to Parties to the Montreal Protocol.

Technical co-operation and technology transfer

18. The "Draft Issues Paper: Ozone Depletion" prepared for the second meeting of the Conference of Parties to the Vienna Convention in June 1991 (UNEP/OzL.Conv.2/Inf.3) identified five major concerns and special needs of developing countries as part of a global effort to protect stratospheric ozone: (i) the cost of CFC supply; (ii) the cost of new chemical substitutes; (iii) the cost of imported products made now with CFCs and that later will be made with new alternatives; (iv) the cost of access to new technology; and (v) maintenance of trade with Parties to the Montreal Protocol in products made with or containing CFCs and halons. Currently, the lack of technical knowledge and financial resources of developing countries inhibits the adoption of certain CFC/halon replacement technologies and the definition and implementation of the best national options for the transition to CFC-free technologies. Development assistance and funding is needed for the transfer of technology during the transition period because currently available resources are already strained as a result of the world debt problem and the dire economic situation of many countries.

19. In response to these special needs, the revised work programmes submitted to the Interim Multilateral Ozone Fund by the World Bank, UNDP and UNEP, and approved by the Executive Committee of the Fund at its fourth meeting (Nairobi, 17-18 June 1991), include the following activities:

- The World Bank envisages activities -- ranging from country-wide reconnaissance of ozone-depleting substance consumption and institutional resources, to country framework plans and phase-out plans - for 16 countries during 1991 (Bangladesh, Chile, Ecuador, Egypt, Ghana, Jordan, Kenya, Malaysia, Mexico, Nigeria, Philippines, Sri Lanka, Thailand, Trinidad & Tobago, Tunisia and Yugoslavia), with two further countries being considered (Brazil and Venezuela) and two additional country programmes planned to start in 1992 (Argentina and Guatemala).

- The key objectives of the work programme of the United Nations Development Programme (UNDP) are to achieve a cost-effective reduction in the production and consumption of substances controlled under the Montreal Protocol in developing countries, and to promote effective technology transfer through technical assistance and on-site training. The countries covered in 1991 are Argentina, Bangladesh, Costa Rica, Egypt, Ghana, Iran, Jordan, Kenya, Mexico, Nigeria, Trinidad & Tobago and Uruguay; further project activities are anticipated in Malaysia, the Philippines, Thailand and Venezuela.

- UNEP will undertake country studies for six low-volume CFC-consuming countries (Maldives, Syria, Uganda, Zimbabwe, two unidentified) to supplement the major studies underway by the World Bank and UNDP, and to update information already held; three regional training workshops on CFC replacement technologies and policy development; and a worldwide technical information exchange system, through the operation of a computerized clearing-house and the preparation of technical brochures and guidelines on CFC phase-out.

V. POTENTIAL AREAS FOR ADDITIONAL SUPPORT ACTION

20. By decision I/12(b), the Preparatory Committee requested the Secretary-General to co-operate with UNEP and WMO in evaluating the need for any additional action to be taken by the Committee to support the ongoing work within the framework of the Vienna Convention and the Montreal Protocol. Taking into account the decisions of the second meeting of the Conference of Parties to the Vienna Convention and the third meeting of Parties to the Montreal Protocol (Nairobi, June 1991), the Preparatory Committee may wish to consider the following options for further support action:

(a) Participation

21. The UNEP Governing Council, by decision 16/40 of 31 May 1991, urged States that have not already done so to ratify, accept or approve the Montreal Protocol and its 1990 amendment, and to pay their contributions towards the Vienna/Montreal Trust Funds and the Interim Multilateral Ozone Funds.

Considering the importance of universal participation and the urgent need for funding of international programmes, the Preparatory Committee could reiterate this appeal.

(b) Monitoring

22. The second meeting of the Conference of Parties to the Vienna Convention, by decision II/9 of 19 June 1991, called for expanding the Global Ozone Observing System Network (GO_3OS) operated by WMO. In particular, Parties were requested to facilitate through bilateral and multilateral contributions the expansion of GO_3OS stations in territory of suitable and interested developing countries (especially in the tropical belt and the southern hemisphere, where 12 to 15 additional stations will be needed, with related calibration and training requirements). Developed countries were requested to make voluntary contributions for GO_3OS through the WMO Special Fund for Environmental Monitoring; and developing countries were requested to make ozone layer monitoring a priority in their requests for bilateral and multilateral assistance in the context of GO_3OS. The Preparatory Committee could express its support for this initiative.

(c) Assessment

23. There still are a number of areas of uncertainty in current knowledge concerning the environmental effects of ozone depletion, including (i) quantification of the primary effects on food production and quality, on forestry, and natural ecosystems; (ii) development of biotechnology for replacement of sensitive crops, especially in tropical areas; (iii) clarification and quantification of influences on human health, especially the immune system, and occurrences of melanomas and cataracts. The Preparatory Committee, in encouraging Governments to participate actively in the ongoing assessment panels for the 1992 meeting of the Parties to the Montreal Protocol, could emphasize the need for further research efforts in these areas.

(d) Standard-setting

24. Even with the present level of scientific and technological knowledge, it is clear that the forthcoming fourth meeting of Parties to the Montreal Protocol in September/October 1992 will have to envisage a further tightening of standards for the production and consumption of ozone-depleting substances. The regional Ministerial Conference on Environment for Europe, held at Dobris/Prague on 21-23 June 1991, urged Governments to participate fully in the next review of the Protocol and to consider in 1992 to accelerate further the timetables for phasing out ozone-depleting substances. The Preparatory Committee could take up this recommendation in a global context, also taking into consideration the potential role of "transitional substances" (such as HCFCs) as greenhouse gases.

(e) Implementation

25. The Montreal Protocol initiated an innovative process of compliance control, through its procedures for data reporting and measures for monitoring implementation. With a view to enhancing the continued effectiveness of internationally agreed measures under the Protocol, the Preparatory Committee could encourage the Parties to improve and expand this process.

(f) Financial co-operation

26. The existing international mechanisms for funding of ozone-related activities and projects in developing countries are crucially dependent on country programmes, in order to identify priorities and to guide action at the national level. The Preparatory Committee could call for strengthening technical assistance to develop country programmes in eligible developing countries, and for appropriate harmonization of project selection criteria and guidelines between the international agencies concerned (e.g., see A/CONF.151/PC/51 on financial resources).

(g) Technology transfer

27. Significant advances have been made with regard to "ozone-friendly" technologies and products, including a range of technologies that were not widely available in 1989 but are now fully commercialized (e.g., in the field of solvents, sterilization, refrigeration and air conditioning, rigid and flexible foams, and halon). In order to ensure that these advances in "public interest" technology can be put to optimal use world-wide, the Preparatory Committee could appeal to the industries concerned and to the international business community at large to contribute fully towards ongoing efforts under the Montreal Protocol and its implementing mechanisms and suggest further measures towards this end (e.g., see A/CONF.151/PC/53 on technology transfer).

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PROTECTION OF THE ATMOSPHERE: TRANSBOUNDARY AIR POLLUTION

Report of the Secretary-General of the Conference

I. INTRODUCTION

1. This report was prepared in response to decision 1/13 of the first session of the Preparatory Committee for the United Nations Conference on Environment and Development, requesting the Secretary-General to prepare for the third session of the Preparatory Committee a report on the subject of transboundary air pollution, stressing that international co-operation was needed to enable developing countries to effectively monitor and assess transboundary air pollution (A/45/46, Annex I).

2. Preparation of this report benefited from contributions and comments by several United Nations bodies and specialized Agencies (in particular, the United Nations Environment Programme; the United Nations Economic Commissions for Africa, Europe, Latin America and the Caribbean; the World Health Organization; and the World Meteorological Organization) as well as independent experts participating in the UNCED secretariat's Working Party on the Atmosphere.

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3. In the light of discussions at the second session of the Preparatory Committee, indicating a concern shared by many delegations over problems of urban atmospheric pollution, UNEP and WHO agreed to provide a summary note on this issue, which is attached as an annex to the present report.

4. Pending a detailed discussion of the topic of transboundary air pollution at the third session of the Preparatory Committee, the cross-sectoral linkages and specific options for action arising from the present document remain to be incorporated in the overview document on "Protection of the atmosphere: options for agenda 21" (A/CONF.151/PC/42/Add.1).

II. BACKGROUND

5. The atmosphere of the Earth is both a reservoir, or receptacle, for many of the bi-products of human activity, and a pathway by which these materials make their way from industrial and other sources to the oceans, to the biosphere, and to humans. As in the case of the "greenhouse gases", long-lived pollutants injected into the atmosphere may sufficiently alter its properties and behaviour to have significant adverse effects on human health and environmental well-being. For other pollutants such as acidifying emissions or toxic organic chemicals, the atmosphere serves as the delivery mechanism to deposit them to sensitive parts of the ecosystem.

6. The perception of atmospheric pollution has evolved from that of a local issue (mainly connected with urban/industrial point-sources) to one of regional dimensions (associated with the long-range dispersion of acid precipitation and photochemical oxidants), eventually contributing to global problems of long-term climatic change. In addition to these "chronic" concerns that are shared by virtually all countries and the most remote areas of the Earth, there is a growing risk of "acute" man-made air pollution emergencies, the impacts of which may again transcend national boundaries: from recurrent seasonal smog alerts and major industrial accidents (such as the lethal Seveso, Bhopal and Chernobyl clouds) to the war-related burning of oilwells in Kuwait.

7. While environmental damage by transfrontier air pollution in Europe and North America is now abundantly documented, there still is insufficient information on the situation in other parts of the world. A 1988 study by UNEP and the International Council of Scientific Unions (ICSU) has identified southern China and other areas of southeast Asia, southwestern India, equatorial Africa including Nigeria, southeastern Brazil, and northern Venezuela, as being areas of probable sensitivity to soil and surface water acidification caused by long-range air pollution. The United Nations Economic Commission for Africa reports substantial levels of air pollution in the Zambian copper mining belt, from the discharge of sulphur dioxide and nitrogen oxides resulting in the formation of acid rains which may fall across the borders to neighbouring countries; specific cases resulting in the formation of smog from nickel mining activities have been observed in Zimbabwe and Angola; and extensive industrial activities in the Republic of South Africa are considered a possible source of transboundary air pollution in that sub-region.

Effects

8. According to a 1990 report prepared by the WHO Regional Office for Europe in the context of the Convention on Long-range Transboundary Air Pollution, "millions of Europeans live in areas with air pollution severe enough to cause each year thousands of premature deaths and many more chronically ill and disabled". The four characteristic pollution situations identified by the report are: summer-type peak concentrations or "episodes" (with photochemical oxidents being predominant); winter-type episodes (with sulphur dioxide and suspended particulate matter dominant); long-term exposure in urban areas to high levels of air pollution; and long-term multimedia exposure. Direct health effects of these situations are well documented and include increased respiratory symptoms, morbidity and mortality as well as increased cancer mortality. Indirect health effects include deteriorating quality of drinking water as a result of acidification and nitrification. As shown in the annex, far less information is available on comparable health risks in developing countries, largely because of a severe lack of data.

9. The effects of long-range air pollution on forests in 25 countries in Eastern and Western Europe have since 1986 been monitored by annual surveys under a joint project by UNEP and the United Nations Economic Commission for Europe, based on harmonized methods and joint training programmes developed in the context of the Convention on Long-range Transboundary Air Pollution. Other joint programmes under the Convention monitor the effects of air pollution on agricultural crops (28 laboratories in 18 countries); the acidification of rivers and lakes (16 countries); and atmospheric corrosion damage caused to materials, including historic monuments and modern industrial structures and coatings (at 39 monitoring sites in 14 countries). No comparable monitoring and assessment programmes exist for regions outside Europe and North America.

10. The Joint Group of Experts on the Scientific Aspects of Marine Pollution (GESAMP, sponsored by IMO, FAO, UNESCO, WMO, WHO, IAEA, UN and UNEP) has carried out several assessments of the interchange of pollutants between the atmosphere and the oceans. In view of the high share of long-range atmospheric inputs to marine pollution, regional monitoring programmes have been initiated for airborne pollutants in the North Sea, the Baltic and the Mediterranean. Efforts are underway to establish an Arctic Monitoring and Assessment Programme (AMAP), and further regional programmes have been proposed to monitor airborne pollution inputs to the Wider Caribbean and the Southwest Pacific regions.

Monitoring networks and emission inventories

11. The European/North American region is the only area for which a reliable time series of data and computer calculations on the transfrontier dispersion of air pollutants exists. The Co-operative Programme for Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe (EMEP), established in 1977, provides Governments with information on the deposition and concentration of air pollutants, as well as on the quantity and significance of long-range transmission of pollutants and fluxes across boundaries. The EMEP programme regularly collects emission data, measures air

and precipitation quality, and models the atmospheric dispersion of pollutants. The sampling network consists of more than 100 monitoring stations in 24 countries, based on 24-hour sampling of air and precipitation. The EMEP fifth-phase programme (1990-1992) includes gas/particles measurements of SO_2, SO_4, NO_2, O_3, NO_3, NH_3, NH_4, HNO_3, and precipitation measurements of pH/H+, SO_4, NO_3, NH_4, Ca, K, Cl, Na, Mg and conductivity; to be extended in the future to hydrocarbons, photochemical oxidants other than ozone, and airborne heavy metals. A joint project by WMO, IAEA and the European Community initiated in 1989 (ATMES) evaluates atmospheric transport models for radio-nuclides in the European region, mainly with a view to improving preparedness and response to accidental releases.

12. The global WMO Background Air Pollution Monitoring Network (BAPMoN) has traced long-range transboundary air pollution since 1968 and has provided most of the atmospheric data to the UNEP Global Environment Monitoring System (GEMS). Together with the Global Ozone Observing System, it is now part of the WMO Global Atmosphere Watch (GAW), which operates a network of 337 station in 78 countries altogether. However, the geographical distribution of these stations is uneven, with the third world severely under-represented, as shown in the following table:

Number of GAW stations in operation as at 31 December 1990
by parameter and WMO Region

Parameters measured	WMO Region							All Regions
	Africa	Asia	S. America	N.& C. America	SW Pacific	Europe	Antarctica	
Precipitation chemistry	14	17	7	41	14	74	1	168
Particles	8	5	2	11	20	33	1	80
Sulphur dioxide	1	1	1	–	2	28	–	31
Turbidity	15	17	5	26	7	30	1	101
Oxides of Nitrogen	–	–	–	–	1	20	1	22
Carbon monoxide	–	–	–	–	2	–	–	2
Carbon dioxide	4	1	1	14	6	12	2	40
Ozone	9	43	5	17	11	49	7	141
Chlorofluoro-carbons	–	1	–	1	2	–	1	5
Radioactivity	1	–	1	–	3	2	2	8
Heavy metals	–	–	–	–	–	4	–	4
Ammonia	–	–	–	–	–	2	–	2
Nitric acid	–	–	–	–	–	2	–	2
Nitrous oxide	–	1	–	1	3	–	1	6

Parameters measured	WMO Region Africa	Asia	S. America	N.& C. America	SW Pacific	Europe	Antarctica	All Regions
Methane	-	-	-	1	3	1	1	6
Solar radiation	-	1	2	1	3	-	1	8
Other (incl. meteorology)	-	-	-	1	3	-	1	5
NUMBER OF STATIONS* all parameters	27	56	13	80	37	116	8	337

*Not the sum of the stations measuring the various parameters, as several parameters may be measured at a given station.

13. Detailed emission inventories and projections are essential for accurate model simulation of the transboundary dispersion and deposition of air pollutants. While existing mathematical models could be adapted for different regions of the world as well as for inter-regional and global modelling, the lack of reliable emissions data outside Europe and North America is a major constraint. Efforts are now underway to develop global inventories under an atmospheric chemistry project within the International Geosphere-Biosphere Programme of the International Council of Scientific Unions (ICSU). With regard to greenhouse gases, the Intergovernmental Panel on Climate Change (IPCC) has endorsed a workplan for the development of guidelines on national emission inventories, following an initiative by the Organisation for Economic Co-operation and Development (OECD).

Abatement technology and costs

14. Combustion of fossil fuels accounts for the bulk of man-made sources of primary air pollutants and their secondary photochemical products - such as ground-level ozone, known to be harmful both to human health and vegetation. In addition to the major stationary sources (i.e., coal-fired and oil-fired power stations and heating facilities) and mobile sources (i.e., motor vehicles, aircraft and ship engines), a wide range of other industrial processes, consumer products and agricultural practices contribute to the overall emissions inventory.

15. Effective technologies to control and reduce most of these emissions at source or at end-of-pipe are available, at least for the majority of new emission sources, but in view of their additional financial and/or energy costs require regulatory coercion or economic incentives to be applied. The same is true for a number of available alternative concepts of energy use and energy savings. While air pollution strategies initially preferred "high stacks" to achieve wide dispersion, most countries have now realized the shortsightedness of this approach and have begun to control and reduce emissions. Information on available cost-effective technologies is regularly exchanged through international programmes and meetings - e.g., the 1991 Nuremberg Seminar on Emission Controls for Stationary Sources, organized by

the United Nations Economic Commission for Europe - although the focus tends to be on technological requirements of developed rather than developing countries.

16. Internationally comparable information is available on emission control costs for stationary and mobile air pollution sources, especially within the framework of the Geneva Convention on Long-range Transboundary Air Pollution (e.g., the proceedings of the 1987 Esslingen Workshop on Emission Control Costs; and the technical annexes of the 1988 Protocol on Nitrogen Oxides and the 1991 draft protocol on volatile organic compounds), as well as on the effectiveness of economic instruments for air pollution control (in UN/ECE Air Pollution Studies No. 7, ECE/EB.AIR/26, 1991; and in the TRACK database developed by the Organisation for Economic Co-operation and Development in 1991). Also in the context of the Geneva Convention, a "Group of Economic Experts on Air Pollution" has undertaken extensive work on cost-benefit analysis and integrated assessment modelling for air pollution control measures, in collaboration with the International Institute for Applied Systems Analysis (IIASA).

II. BASIS FOR INTERNATIONAL ACTION

17. There are currently three types of international instruments to regulate air pollution: overall agreements for transboundary air pollution control and reduction (presently existing at a regional or bilateral level only); sectoral technical standards to control emissions from different sources (global and regional); and ambient air quality targets (global and regional).

Transboundary regimes

18. The 1979 Convention on Long-range Transboundary Air Pollution (in force since 1983), elaborated and administered within the framework of the UN/ECE, is geographically limited to Europe and North America and has been ratified by 31 States and the European Community. In addition to laying down common policy principles - including a commitment to use "the best available technology that is economically feasible" for air pollution abatement - this regional treaty established institutions for permanent co-operation, including annual review meetings of an intergovernmental Executive Body, and provides the legal framework for several joint programmes and specific agreements. It has been supplemented, in particular, by a 1984 Protocol on joint long-term financing of the EMEP monitoring programme (ratified by 30 Parties and in force since 1988); a 1985 Protocol on the reduction of sulphur emissions or their transboundary fluxes by at least 30% (ratified by 20 Parties and in force since 1987); and a 1988 Protocol concerning the control of emissions of nitrogen oxides or their transboundary fluxes (ratified by 18 Parties and in force since 1991). A further protocol on the control of volatile organic compounds or their transboundary fluxes is currently being elaborated and expected to be signed in November 1991; a revision of the 1985 sulphur protocol is in preparation; and future regulation of toxic heavy metals and persistent organic compounds is being considered. The regional action initiated by the 1979 Convention is generally considered successful, with the EMEP monitoring data showing an overall 20% decline of sulphur emissions in the European region over the past 10 years.

19. Other legally binding agreements for transboundary air pollution abatement have been concluded within the sub-regional framework of the European Community (elaborated in a series of enactments, such as the 1988 EEC Council Directive on the limitation of emissions of certain pollutants into the air from large combustion plants), and on a bilateral basis between neighbouring countries in Europe (e.g., Finland-USSR in 1989) and North America (Mexico-United States in 1987, Canada-United States in 1991). While most of the earlier regional and bilateral agreements aimed at a flat-rate percentage reduction of specified air pollutants, the focus of more recent negotiations has been on the determination of agreed "critical loads" as a basis for pollution control measures.

20. In addition, several regional agreements for marine environment protection include among their objectives the abatement of "land-based" air pollution. For the North Sea and Baltic Sea areas, the Parties to the 1974 Paris and Helsinki Conventions declared their intention at ministerial conferences in 1990 to achieve a 50% reduction of atmospheric emissions of specified toxic, persistent and bioaccumulative substances. For the Mediterranean, a technical annex regulating atmospheric pollutants is currently in preparation pursuant to a 1980 Protocol to the 1976 Barcelona Convention. Measures against marine pollution "through the atmosphere" are also envisaged by a 1983 Protocol to the 1981 Lima Convention for the Protection of the Marine Environment and Coastal Areas of the South-East Pacific (in force since 1986); by a Protocol to the 1978 Kuwait Regional Convention for Co-operation on the Protection of the Marine Environment from Pollution; and by the global Montreal Guidelines for the protection of the marine environment against pollution from land-based sources, adopted by the UNEP Governing Council in 1985.

Sectoral regulation

21. International technical standards for the control of specific emission sources have existed in the automobile sector since 1970. Under a 1958 agreement concerning the adoption of uniform conditions of approval and reciprocal recognition of approval for motor vehicles equipment and parts, concluded and regularly updated within the framework of the United Nations Economic Commission for Europe (ECE), 21 countries apply uniform rules for the licensing of motor vehicles, including certification of compliance with agreed technical criteria determining the emission of gaseous pollutants (hydrocarbons, carbon monoxide and nitrogen oxides). On a sub-regional level, common automobile emission standards have been elaborated (in the form of mandatory regulations and directives) by the 12 member countries of the European Community, and (in the form of voluntary guidelines) by the 8-members "Stockholm Group" of countries. In view of the fact that some of the ECE technical standards are also followed on a voluntary basis by several countries outside Europe (e.g., Australia, New Zealand and Singapore), prospects of global harmonization are currently under discussion.

22. For aircraft engine emissions, the Council of the International Civil Aviation Organization (ICAO) has since 1981 set worldwide uniform certification procedures, by technical annex 16 (II) of the 1944 Chicago Convention on International Civil Aviation. Under this system, ICAO member countries mutually recognize certificates issued in conformity with common

testing standards and emission levels for smoke and gaseous pollutant emissions (hydrocarbons, carbon monoxide, and nitrogen oxides).

23. For air pollution from ships, the Marine Environment Protection Committee of the International Maritime Organization (IMO) established a working group in 1990 to determine target loads and strategies for the reduction of ship-based air pollutants (including sulphur dioxide, nitrogen oxides, volatile organic compounds and ozone-depleting substances) to be laid down in a new annex to the 1973/1978 MARPOL Convention for the Prevention of Pollution from Ships. As regards air pollution from waste incineration at sea, the Parties to the 1972 London Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter decided in 1990 to terminate all marine incineration of liquid noxious wastes by the end of 1991, thereby accelerating and superseding earlier timetables.

24. Atmospheric emissions from municipal waste incineration plants in the European Community are since 1989 subject to uniform "limit values" (for dust, heavy metals, hydrochloric acid, hydrofluoric acid and sulphur dioxide) and concentration limits for carbon monoxide and organic compounds.

25. Technical standards for protection against radioactive air pollution are laid down in the comprehensive "basic safety standards for radiation protection" recommended by the International Atomic Energy Agency (IAEA); in mandatory regional standards adopted by the Council of the European Community under the 1957 EURATOM Treaty; and in the International Labour Organization's 1960 Convention concerning the protection of workers against ionizing radiation.

Air quality targets

26. Several directives establishing "limit values" and "guide values" for ambient air concentrations have been enacted since 1980 by the European Community (especially for sulphur dioxide, suspended particulates, nitrogen dioxide and lead). Global "environmental health criteria" and regional "air quality guidelines for Europe" have been set by the World Health Organization (e.g., for sulphur oxides, suspended particulates, nitrogen oxides, ozone and other photochemical oxidants); though drafted by ad hoc expert groups without formal intergovernmental endorsement, these are now widely used as a yardstick for comparative evaluation of air quality, as illustrated by the annex to the present report.

III. POTENTIAL AREAS FOR ACTION

27. After reviewing the current state of experience in combating transboundary air pollution, there appear to be three major types of gaps: gaps in basic information; gaps in transnational communication and training; and gaps in international governance.

Information needs

28. While voluminous and increasingly reliable information now exists on transboundary air pollution in the European/North American region - both as regards long-range background data, and urban/industrial pollution data and

projections - little or no basic information is available for most third world countries. WMO has repeatedly underlined the most urgent need for more balanced geographical coverage of the Global Atmosphere Watch (GAW) network, by way of further monitoring stations in developing countries, at the priority locations already identified by GAW expert consultations in 1989 and 1991. Extension of the network and upgrading of data quality could be accomplished at comparatively low cost, with the technical equipment for a station to monitor basic GAW parameters (including major air pollutants and most greenhouse gases) estimated at less than $100,000, and a total of 50 or 60 additional stations considered sufficient to bring the network to full capacity. Estimates for substantial improvements in urban air pollution monitoring are substantially lower. Technical assistance will be particularly crucial for the development of reliable and harmonized national emission inventories in developing countries. Following the example of recent joint projects for air pollution monitoring in Eastern Europe, bilateral aid programmes could effectively be used for these tasks and the associated training requirements.

29. A second major information gap concerns the specific ecological sensitivity of areas outside Europe and North America to the risks of acidification and other air pollution effects. The project on "Acid Rain and Emissions in Asia" recently initiated by a consortium of research institutions (co-sponsored by the World Bank, UNEP, ESCAP and the United States Department of Energy) has highlighted the need for data on "critical loads/levels" of pollution in the local ecosystems concerned. A considerable amount of expertise in mapping and modelling of critical loads would be available from the corresponding co-operative programmes already established in Europe and North America.

30. Reliable ground-level measurements of air pollution in representative developing country areas are not only essential for long-term global monitoring and for the verification of model calculations and remote sensing data but also as baseline information in pollution emergencies, as illustrated by the transboundary air pollution release resulting from the 1991 Gulf War. Furthermore, both emission inventories and pollution effects in the tropics and sub-tropics are likely to differ substantially from those in temperate regions, as a result of natural conditions (e.g., local soil composition influencing urban dust pollution in Beijing, Cairo and Delhi, as mentioned in the annex), or because of man-made biomass burning such as seasonal savannah fires or slash-and-burn practices.

Communication and training needs

31. Effective abatement of transboundary air pollution is less constrained by shortage of technological information or know-how than by inadequate international transmission and application of such knowledge. Systematic information exchange on "best available" (state-of-the-art) technologies for control of emissions both from stationary and mobile sources occurs mostly between highly developed countries - e.g., the Parties to the Convention on Long-range Transboundary Air Pollution - with little or no consideration for the special requirements of developing countries. International funding institutions could play an important role in facilitating the participation of

these countries in ongoing information exchanges, following the example of the UNDP/ECE project on "Environmental Planning and Management: Air Pollution".

32. Similarly, it is not the absence of international treaties which prevents concerted action in response to transboundary air pollution in regions outside Europe and North America, but rather a general lack of communication on the subject between the countries concerned. Experience in the UN/ECE region has shown that one of the major factors leading to intergovernmental action for reducing sulphur and nitrogen emissions was the growing scientific consensus among national experts which developed in the course of joint programmes and meetings. As these programmes and meetings are not closed to experts from outside the region, a useful first step could be the participation of technical observers from developing countries, possibly with financial support from international funding institutions or bilateral aid agencies. Furthermore, the programme co-ordinating centres operating under the Convention on Long-range Transboundary Air Pollution could serve as temporary training bases for qualified experts from developing countries, subject to the availability of funding for this purpose.

Governance needs

33. The Montevideo Programme for the development and periodic review of environmental law, adopted by the UNEP Governing Council (decision 10/21 of 31 May 1982), called for the preparation of a global "code of conduct with respect to transboundary air pollution, drawing upon existing regional and bilateral experience". That recommendation has not been followed up, however, and there are indeed reasons to consider possible alternative approaches instead. The positive achievements of transboundary air pollution abatement in Europe and North America may to a large extent be attributed to an advanced degree of regional solidarity and co-operation using existing institutional structures in this region. Rather than attempting to "globalize" the existing Convention on Long-range Transboundary Air Pollution, it would seem preferable (i) to take advantage of the scientific capacity and technical-managerial know-how accumulated under this regional regime, by associating experts from outside the region - for purposes of training, information and technology exchange - with the monitoring and assessment programmes already established in the ECE region; and (ii) to explore the possibilities of setting up similar regional regimes in other areas with transboundary air pollution problems. The identification of such areas or sub-regions for this purpose could be initiated under the auspices of the competent regional bodies of the United Nations (though not necessarily limited by their geographical delineations), taking into account both the substantive range of transboundary pollution in the area concerned and the availability of suitable intergovernmental institutions for co-operation.

34. As evidenced by the number of United Nations bodies and specialized agencies already involved in technical standard-setting for different sources of air pollution in the transport sector (including UN/ECE, ICAO and IMO), there is no dearth of regulatory competences or initiatives in this field. What appears to be missing, however, is a measure of intersectoral co-ordination and harmonization, to avoid inconsistent or conflicting treatment of different transport modes and industries with regard to emission standards, fuel quality standards, etc. This would not require any major institutional

innovation: as an example, uniform technical recommendations on the transport of dangerous goods - applicable to all modes of transport by road, rail, air, sea and inland waters (ST/SG/AC.10/1, 6th revised edition 1989) - have for the past 30 years been laid down through a 15-members Committee of Experts established by ECOSOC Resolution 468 (XV). It would seem appropriate today to look for similar intersectoral guidance on the common technical problems of air pollution generated by all modes of transportation.

35. Given the frequent reference to internationally comparable air quality targets, especially as a basis for the assessment and abatement of urban air pollution, the present system of setting criteria and guidelines by ad hoc WHO expert panels (mostly on the basis of European data) could be expanded to a more permanent intergovernmental level that would also give due consideration to the concerns of developing countries. A group of governmentally designated experts could thus be convened, with technical backstopping from the appropriate United Nations bodies and agencies, to set and periodically review authoritative (albeit non-mandatory) guidelines for ambient air quality. While the primary focus should be on human health risks, including the role of indoor air pollution, critical values for other environmental risks could also be taken into account with due regard to regional differences and priorities.

36. Responses to transboundary air pollution will inevitably impinge on a wide range of other environment and development activities. For example, nitrogen oxides emissions must be controlled locally because of their contribution to the formation of ground-level ozone and urban smog; regionally because of their share in acid precipitation; and globally because tropospheric ozone also acts as a greenhouse gas. International action in this field thus offers a number of multiple-benefits options for decision-making.

ANNEX*

Urban Air Pollution as a Source of Transboundary Air Pollution:
Air Pollution in Megacities of the World

1. Many of the major cities of the world are beset by a series of environmentally related problems not the least of which is their deteriorating air quality. The available information shows that WHO guidelines are being regularly exceeded in major urban areas. Given the rate at which these cities are growing, and the general lack of pollution control measures, the situation will no doubt worsen and the living standards of many urban residents will deteriorate. Although good progress has been made in controlling air pollution problems in many industrialized countries over the last two decades, air quality in large cities of the developing countries is deteriorating. Comprehensive and urgent action is clearly necessary.

2. In order to address the situation, WHO and UNEP initiated a study of air pollution in twenty of the world's largest urban areas or "megacities". The assessment began in November 1990 and is being based on the air quality data obtained over the years by the WHO/UNEP Air Quality Monitoring Programme, a component of the Global Environment Monitoring System. In addition to information on air quality, data on pollution sources and other indicators were also collected from the authorities of the cities. The assessment will be concluded in October 1991 at a meeting of governmentally designated experts who will review the results and recommendations. The present note summarizes the results obtained to date. It also includes a number of conclusions regarding action by national as well as international agencies. The current assessment clearly shows the lack of reliable information on air pollution and its effects on populations. It is clear that the international community through participation in Earthwatch must fill this gap.

3. For the purpose of this report, megacities are defined as those cities with a current or projected population of 10 million or more by the year 2000. The cities included in the assessment are Bangkok, Beijing, Bombay, Buenos Aires, Cairo/Giza, Calcutta, Jakarta, Karachi, London, Los Angeles, Metro Manila/Quezon City, Mexico City, Moscow, New Delhi, New York City, Rio de Janeiro, Sao Paulo, Seoul, Shanghai, and Tokyo/Yokohama.

4. Although the urban growth rate has slowed in developed cities over the past 20 years, it is projected that all 20 megacities will undergo urban growth into the next century - the South-east Asian and Indian cities having the highest average annual growth rate. The air pollution problems of these cities vary greatly due to a number of factors including geography, demography, climate and the rate of industrialization and socio-economic

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* Prepared by the World Health Organization (WHO and the United Nations Environment Programme (UNEP)). WHO and UNEP have issued two earlier comprehensive assessments: The first, entitled Urban Air Pollution 1973-1980, was published in 1984; the second was conducted in 1988, resulting in the publication, GEMS Assessment of Urban Air Quality.

development. These problems are of increasing importance due to the projected growth in the urban population worldwide and thus the potential increase in the number of people exposed to air pollution. United Nations estimates (Prospects of World Urbanization, 1988) indicate that by the year 2000, 47% of the global population will be living in urban areas. The issues raised apply not only to current megacities, but to all rapidly developing urban areas.

Sources

5. The combustion of fossil fuels to generate electricity and to provide power for industrial processes leads to the production of sulphur dioxide, oxides of nitrogen, primary particulates (natural dusts, fly ash, soot) and secondary particulates (ozone and acid aerosols). Domestic solid fuel use, mainly coal and wood, may also significantly contribute to pollutant emissions in some cities. Motor vehicles are now a major factor influencing air quality in cities throughout the world. Petrol-driven motor vehicles are the principal source of carbon monoxide, oxides of nitrogen and hydrocarbons. It is emissions of these primary pollutants that play an important role in the formation of secondary photochemical oxidants such as nitrogen dioxide and ozone.

Long-range transport

6. The long-range transport of urban air pollutants results in impacts on a national and regional scale. Urban emissions of nitrogen and sulphur oxides may contribute to acid deposition at great distances from the source. Projected increases in urbanization, industrialization and motorization, and the associated increase in emissions, would suggest that megacities and other rapidly developing urban areas will become an important source of transboundary pollution.

Health effects

7. The human health effects of air pollution vary according to the intensity and duration of exposure and the health status of the population exposed. The level of exposure may be influenced by many factors such as climate, nutrition, quality of housing, smoking, occupation, etc. Certain members of the population may be at greater risk, for example, those suffering from respiratory and cardiopulmonary disease, pregnant women, young infants and the elderly, hyper-responders and people exercising. Increased mortality, morbidity and deficits in pulmonary function has long been associated with annual and daily mean sulphur dioxide and suspended particulate matter concentrations above WHO guideline values.

8. Motor vehicle emissions cause a wide range of health effects. Carbon monoxide has a high affinity for haemoglobin and is able to displace oxygen which may have cardiovascular and/or neurobehavioural effects. Nitrogen dioxide and ozone often act synergistically and acute exposure can cause inflammatory and permeability responses, lung function decrements, increases in airway reactivity, and general respiratory symptoms. Lead is believed to cause blood enzyme changes, anaemia, hyperactivity and other neurobehavioural effects.

SUMMARY OF RESULTS OF THE ASSESSMENT TO DATE

Sulphur dioxide

9. GEMS/Air data, together with data from national and local authorities, show that sulphur dioxide concentrations have decreased in line with emissions in many of the megacities. This trend has been largely brought about by changes in industrial and domestic fuel use. In some cities, such as London, New York City and Sao Paulo, "clean air" legislation has forced industry and domestic users to switch from high sulphur coal and oil to less directly polluting fuel such as electricity and natural gas. In other cities, e.g., Bombay, the change has been brought about largely by economic benefits.

10. Alternatively, several cities show an increasing trend in annual sulphur dioxide concentrations and emissions. For example, increasing emissions in Delhi are mainly as a result of rapid industrialization. Beijing and Shanghai are almost totally reliant on coal for electricity generation and as an industrial and domestic fuel; therefore, annual average concentrations regularly exceed WHO guideline values. Alternatively, in Bangkok and Sao Paulo a large proportion of sulphur dioxide emissions are attributed to transport.

11. Despite reductions in annual average concentrations, urban sulphur dioxide levels show marked seasonal and diurnal variation. Short-term guideline exceedences often occur corresponding with temperature inversions and cold winter conditions. These pollution "episodes" may still pose a significant risk to health, causing increases in mortality and respiratory illness. High pollution episodes may involve a number of pollutants (i.e., sulphur dioxide, nitrogen dioxide, carbon monoxide) which act synergistically, intensifying health effects.

Suspended particulate matter

12. Trends in suspended particulate matter are similar to those observed for sulphur dioxide in industrialized cities such as New York City and London. Once again, changes in fuel use have influenced both emissions and ambient concentrations. Suspended particulate matter emissions have fallen in these cities despite an increase in power generation from coal. Generating capacity has generally shifted out of the cities and more efficient combustion techniques with particulate removal equipment have been introduced. Coal washing and the introduction of smokeless fuel have also helped to reduce emissions.

13. The situation in many of the developing megacities is very different, mainly due to rapid industrialization. The economic benefits to both cities and nations associated with industrialization often out-weigh environmental concerns.

14. Considerable concern has been raised worldwide with regard to smoke emissions from diesel vehicles. This source can account for up to 70 per cent of suspended particulate matter (smoke) emissions in some cities. Most emissions estimates and projections show an increase in respirable particulates attributed to diesel vehicles, due to their increasing popularity

combined with a lack of adequate control legislation. This is of particular concern due to the carcinogenicity of certain smoke constituents, e.g., polycyclic aromatic hydrocarbons.

15. Several of the megacities are characterized by very high natural dust levels which influence suspended particulate matter concentrations. Beijing, Delhi and Cairo are examples of cities where local soil characteristics and climate greatly influence urban suspended particulate matter levels.

Oxides of nitrogen

16. The principal sources of oxides of nitrogen in urban areas are fossil fuel combustion and, increasingly, motor vehicle transport. Each category accounts for between 1/2 and 1/3 of all oxides of nitrogen emissions in most cities. Nitrogen dioxide is of greater potential risk to health than nitric oxide as it is a respiratory irritant. Oxides of nitrogen are also important precursors of secondary photochemical pollutants such as nitrogen dioxide and ozone.

17. Analysis of nitrogen dioxide data for the megacities assessment reveals that ambient concentrations are increasing in virtually all urban areas. The correlation between elevated oxides of nitrogen concentrations and motor vehicles has been clearly demonstrated by wide-scale (distribution) monitoring in London and Los Angeles. The most heavily congested areas and major transport corridors show the highest annual average concentrations. Nitrogen dioxide, like other urban air pollutants, is affected by local topography and meteorological conditions.

18. Effective oxides of nitrogen control measures have, to a large extent, been countered by the phenomenal increase in motor vehicle transport. Even in cities where strict emissions controls have been imposed on mobile and stationary sources, such as in United States cities and Tokyo, levels have only stabilized, largely as a result of the increase in traffic. Effective oxides of nitrogen controls for stationary sources (e.g., catalysts) are already employed in many industrialized countries and the distribution and refinement of this technology should be encouraged wherever possible.

19. In order to reduce oxides of nitrogen emission, alternatives to fossil fuel are required. Promotion of public transport, especially in cities, and a switch to alternative fuels for personal transport will help. In the short term, improved road planning would also help to reduce exposure.

Ozone

20. Ozone data are less widely available than for other pollutants. Cities, such as Los Angeles and Mexico City, which have high motor vehicle populations and the necessary meteorological conditions tend to experience the worst ozone episodes. Ozone formation is a photochemical process and is dependent upon solar radiation and emissions of oxides of nitrogen and volatile organic compounds, chiefly from motor vehicles. Exceedances of national and WHO guideline levels are a regular occurrence in Los Angeles, Mexico City and Sao Paulo throughout the year.

21. Little is known about ozone concentrations in the cities of developing countries, as there have been few studies or monitoring programmes. Considering the high increase in oxides of nitrogen and volatile organic compound emissions in many of the megacities (e.g., Delhi, Bombay) associated with increasing road traffic and favourable meteorological conditions, it is likely that ozone will play an increasingly important role in the future. Ozone control is to a large extent dependent upon the control of oxides of nitrogen and volatile organic compounds.

Carbon monoxide

22. It is widely accepted that emissions of carbon monoxide have risen in line with the growth of motor vehicle numbers and mileage in recent years. The introduction of stricter mobile emissions control legislation and more efficient engines in many developed countries have helped to reduce or stabilize ambient carbon monoxide concentrations in many cities, most notably, Tokyo, New York City, Los Angeles and London. Once again, in the cities of many developing countries trends are less obvious due to the lack of monitoring. Emissions inventories suggest that the carbon monoxide emissions from motor vehicles are increasing in a similar way to oxides of nitrogen and this is reflected in studies on average concentrations and human exposure. Even where average urban levels are falling, elevated kerb-side carbon monoxide concentrations are of major concern, due to direct exposure of people at the road side.

23. The issues surrounding carbon monoxide control are similar to those for oxides of nitrogen and ozone as motor vehicles are the main source, especially in terms of direct human exposure. In the short term, the introduction of emissions control legislation similar to that in force in the United States, Japan and Europe may help to stabilize emissions.

Lead

24. Exposure to lead from mobile sources is important in those developing countries where tetra-alkyl lead is still a major fuel additive. Levels of tetra-ethyl lead in petrol have been reduced and even phased out in many developed countries and this is reflected in the ambient airborne lead concentrations of Tokyo, New York City, Los Angeles and London.

PRELIMINARY CONCLUSIONS

(a) The air pollution problems in most of the megacities of the developing countries are severe and there is every indication that they will get worse with continued urbanization.

(b) There are notable improvements with respect to certain pollutants in many of the cities of developed countries; however, this is not always the case. For example, oxides of nitrogen and ozone remain a problem despite stringent controls in some countries.

(c) More specifically, sulphur dioxide concentrations have been decreasing in most of the cities. However, in those developing cities reliant on coal as a fuel, levels remain unacceptably high. This is also true for

suspended particulate matter. Emissions of suspended particulate matter from diesel vehicles are of increasing concern. Trends in oxides of nitrogen concentrations are generally upward or stationary at best. Information on ozone concentrations is limited, but where it is available, regular exceedances of health guidelines are shown. Increasing motor vehicle emissions, particularly in developing countries, are giving rise to increases in carbon monoxide and lead levels. In many developed countries, lead levels are decreasing due to the phasing out of leaded petrol.

(d) There are still major difficulties in assessing the adverse health effects of urban air pollution due to lack of information on actual human exposure. This is particularly true in the cities of developing countries where socio-economic factors, climatic conditions, etc. are very different from those areas where such research has been conducted. The scarcity of human health data has, no doubt, contributed to the lack of appreciation of the severity of air pollution problems in these cities and thus to the lack of positive action.

(e) The national capabilities for the assessment and management of air pollution problems in most countries are grossly inadequate.

The assessment, when completed, will propose a series of actions which need to be addressed by national governments. These are expected to include:

(i) Relevant international organizations participating in Earthwatch must play an active role in supporting governments in building up and/or strengthening their monitoring and assessment capabilities and in establishing causal relationships and management alternatives.

(ii) In order to reverse the trends currently observed, stringent emission control strategies should be applied to all new industrial developments.

(iii) Urban air quality can be greatly improved by the implementation of innovative development schemes, e.g., better mass transit, combined heat and power stations, better treatment of waste, and urban planning.